

ControlLogix Controllers

The ControlLogix controller provides a scalable controller solution capable of addressing a large number of I/O points.

The controller can be placed into any slot of a ControlLogix chassis and multiple controllers can be installed in the same chassis. Multiple controllers in the same chassis communicate with each other over the backplane (just as controllers can communicate over networks) but operate independently.

ControlLogix controllers can monitor and control I/O across the ControlLogix backplane, and over I/O links. ControlLogix controllers can communicate over EtherNet/IP, ControlNet, DeviceNet, DH+, Remote I/O, and RS-232-C (DF1/DH-485 protocol) networks and many third-party process and device networks. To provide communication for a ControlLogix controller, install the appropriate communication interface module into the chassis.

Cat. No.	Description	User Memory
1756-L71	ControlLogix controller, 1 built-in USB port ⁽¹⁾	2 MB
1756-L72		4 MB
1756-L73		8 MB
1756-L74		16 MB
1756-L75		32 MB
1756-L73XT	ControlLogix-XT controller, extreme environment	8 MB
1756-L71S	GuardLogix safety controllers	2 MB standard 1 MB safety
1756-L72S		4 MB standard 2 MB safety
1756-L73S		8 MB standard 4 MB safety
1756-L7SP	GuardLogix safety partner (one is required for each GuardLogix L7 controller)	—

(1) The USB port is intended only for temporary local programming purposes and not intended for permanent connection. Do not use the USB port in hazardous locations.

For detailed specifications, see the 1756 ControlLogix Controllers Specifications Technical Data, publication [1756-TD001](#).

GuardLogix Controllers

A GuardLogix controller is a ControlLogix controller that also provides safety control.



Application	Description
SIL 1, 2, 3	<p>The GuardLogix controller system is type-approved and certified for use in safety applications up to and including SIL 3 according to IEC 61508, and applications up to and including PLe/Cat.4 according to ISO 13849-1. For more information, see the following:</p> <ul style="list-style-type: none"> • GuardLogix Controllers Systems Safety Reference Manual, publication 1756-RM093. • GuardLogix Controllers User Manual, publication 1756-UM020. • GuardLogix Safety Application Instruction Set Reference Manual, publication 1756-RM095.

The GuardLogix system is a dual controller solution. You must use a primary controller and a safety partner to achieve SIL 3/PLe/Cat. 4.



Primary Controller	Safety Partner
1756-L71S, 1756-L72S, 1756-L73S	1756-L7SP
1756-L73SXT	1756-L7SPXT

During development, safety and standard have the same rules, multiple programmers, online editing, and forcing are all allowed. Once the project is tested and ready for final validation, you set the Safety Task to a SIL 3 integrity level, which the GuardLogix controller enforces. When safety memory is locked and protected, the safety logic can't be modified and all safety functions operate with SIL 3 integrity. On the standard side of the GuardLogix controller, all functions operate like a regular Logix controller.

Use Guard I/O modules for field device connectivity on Ethernet or DeviceNet networks, and for safety interlocking between GuardLogix controllers use Ethernet or ControlNet networks. Multiple GuardLogix controllers can share safety data for zone to zone interlocking, or one GuardLogix controller can use remote distributed safety I/O between different cells/areas.

The GuardLogix controller has the standard features of a ControlLogix controller and these safety-related features.

Feature	1756-LSP, 1756-L71S, 1756-L72S, 1756-L73S, 1756-L7SP, 1756-L73SXT, 1756-L7SPXT
Safety communication options	Standard and safety <ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet
Network connections, per network module	<ul style="list-style-type: none"> • 256 EtherNet/IP; 128 TCP (1756-EN2x, 1756-EN3x) • 128 EtherNet/IP; 64 TCP (1756-ENBT) • 128 ControlNet (1756-CN2/B, 1756-CN2R/B) • 64 DeviceNet (1756-DNB)
Controller redundancy	Not supported
Safety Task Programming languages	Relay ladder

Accessories—Controllers

Memory Cards

Memory cards offer nonvolatile memory to store a user program and tag data on a controller. The ControlLogix L7 and GuardLogix L7 controllers ship with 1784-SD1 Secure Digital (SD) card installed. The memory card installs in a socket on the controller. Through the Logix Designer application, you can manually trigger the controller to save to or load from nonvolatile memory or configure the controller to load from nonvolatile memory on powerup.

Attribute	1784-SD1	1784-SD2
Memory	1 GB	2 GB
Supported controllers	1756 ControlLogix L7 and 1756 GuardLogix L7	
Weight, approx	1.76 g (0.062 oz)	

1756 Energy Storage Modules

Instead of a battery, the ControlLogix L7 and GuardLogix L7 controllers ship with a 1756-ESMCAP energy storage module (ESM) installed.

Cat No.	Description
1756-ESMCAP	Capacitor-based ESM included with the controller.
1756-ESMNSE	ESM without WallClockTime back-up power. Additionally, you can use this ESM only with a 1756-L73 (8 MB) or smaller memory-sized controller. Use this ESM if your application requires that the installed ESM deplete its residual energy to 40 μ J or less before transporting it into or out of your application.
1756-ESMNRM	ESM that secures the controller by permanently preventing the USB connection and SD card use. This ESM provides your application an enhanced degree of security.

The ControlLogix-XT L7 extreme temperature controller ships with a 1756-ESMNCAPXT energy storage module installed.

Cat No.	Description
1756-ESMNCAPXT	Capacitor-based ESM included with the controller.
1756-ESMNSEXT	ESM without WallClockTime back-up power. Additionally, you can use this ESM only with a 1756-L73XT (8 MB) or smaller memory-sized controller. Use this ESM if your application requires that the installed ESM deplete its residual energy to 40 μ J or less before transporting it into or out of your application.
1756-ESMNRMXT	ESM that secures the controller by permanently preventing the USB connection and SD card use. This ESM provides your application an enhanced degree of security.

The 1756-L7SP safety partner for a GuardLogix system has the following modules available.

Cat No.	Description
1756-SPESMNSE	Capacitor-based ESM for a GuardLogix safety partner.
1756-SPESMNRM	ESM for a GuardLogix safety partner that secures the safety partner by permanently preventing the USB connection and SD card use.